

### REMARKS

Favorable consideration of this Application as presently amended and in light of the following discussion is respectfully requested.

After entry of the foregoing Amendment, Claims 1-13 are pending in the present Application. Claims 1-5, 7-10, 12, and 13 have been amended to address cosmetic matters of form. Support for the amendment of Claim 1 can be found at least at Fig. 1 of the specification. No new matter has been added.

By way of summary, the Official Action presents the following issues: Claims 1-10 stand rejected under 35 U.S.C. § 101 allegedly being directed toward non-statutory subject matter; and, Claims 1-6 and 9-13 stand rejected under 35 U.S.C. § 102 as being anticipated by Acero et al. (U.S. Patent No. 5,604,839, hereinafter Acero).

### REJECTION UNDER 35 U.S.C. § 101

The outstanding Official Action has rejected Claims 1-10 under 35 U.S.C. § 101 allegedly being directed toward non-statutory subject matter. Applicant respectfully traverses the rejection.

With regard to Claims 1-10, MPEP § 2106 provides that:

Office personnel have the burden to establish a *prima facie* case that the claimed invention as a whole is directed to solely an abstract idea or to manipulation of abstract ideas or does not produce a useful result. Only when the claim is devoid of any limitations to a practical application in a technological arts should it be rejected under 35 U.S.C. § 101 . . . Further, when such a rejection is made, office personnel must expressly state how the language of the claims has been interpreted to support the rejection. (emphasis added) See MPEP § 2106.

The rejection merely includes a conclusory statement, “the claims manipulate an abstract idea (“speech single”) or calculate a mathematical problem without producing a

useful, concrete and tangible result.”<sup>1</sup> Thus, Applicant respectfully submits that no express statement has been provided as to how the language of the claims have been interpreted to support the 35 U.S.C. § 101 rejection in violation of the guidelines of MPEP § 2106.

Accordingly, should such a rejection be maintained in a subsequent communication with respect to any of the aforementioned claims, Applicant respectfully requests the Examiner provide an express statement on the record in accordance with MPEP § 2106 guidelines explaining how such claim terminology, such as “input speech signal,” “preprocessed speech signal,” “speech recognition,” and “recognition result” is interpreted. More specifically, how such limitations are deficient to define a practical application in the technological arts of useful, concrete and tangible result. See State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368, 1374, 47 (Fed. Cir. 1998) (discussing practical application of a mathematical algorithm, formula, or calculation.).

Accordingly, Applicant respectfully requests that the rejection of Claims 1-10 under 35 U.S.C. § 101 be withdrawn.

#### REJECTION UNDER 35 U.S.C. § 102

The outstanding Official Action has rejected Claims 1-6 and 9-13 under 35 U.S.C. § 102 as being anticipated by Acero. Applicant respectfully traverses the rejection.

By way of background, speech recognition typically includes a three-step process of inputting a speech signal to a speech recognition system, preprocessing the speech signal, and recognizing the speech based upon the received speech signal. In such systems, the speech recognition rate may be affected based upon the preprocessing steps performed.<sup>2</sup>

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<sup>1</sup> Office Action at para. 1

<sup>2</sup> Application at page 1.

With at least the above deficiencies in mind, the present invention is provided. With at least the above object in mind, a brief comparison of the claimed invention, in view of the cited reference, is believed to be in order.

Applicant's amended Claim 1 recites, *inter alia*, a method for recognizing speech, including:

... wherein in said preprocessing, a step of performing a variance normalization is applicable to the received speech signal, said preprocessing includes:

performing a statistical analysis of said speech signal, thereby generating and providing statistical evaluation data,

generating a normalization degree data from said statistical evaluation data, and

performing said variance normalization on said speech signal in accordance with said normalization degree data – in particular with a normalization strength corresponding to said normalization degree data, with normalization strength corresponding to said normalization degree data with normalization degree data having a value or values being 0 with respect to a given threshold value indicating that no variance normalization has to be performed. (emphasis added)

Acero describes a system and associated method of improving speech recognition through front-end normalization of feature vectors. As shown in Fig. 1, a speech recognition system (10) is provided to include an input device (12), an amplifier (14) for amplifying the signal of the input device, and an analog-to-digital converter (16) for digitizing the amplified signal.<sup>3</sup> The digitized signal is provided to a feature extractor (20) that extracts certain features from the signal in the form of feature vectors. The feature extractor (20) breaks down the digital signal of the a/d converter into frames of speech; and, then, extracts a feature vector from each of the frames. The feature vector extracted from each from of speech comprises cepstral vectors. The feature vector is then provided to a normalizer (22) for normalizing the vector. The normalizer is then used in conjunction with a pattern matcher

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<sup>3</sup> Acero at Fig. 1; column 3, lines 16-23.

(24) to compare the normalized vector to feature models stored in a database (26) for recognizing speech elements.<sup>4</sup>

Conversely, in an exemplary embodiment of the Applicant's invention, a speech recognition method is provided, in which an input speech signal is preprocessed in order to generate a preprocessed speech signal. The preprocessing includes performing a variance normalization on the received speech signal, which includes performing a statistical analysis of the speech signal and generating a statistical evaluation data based on the analysis. Normalization degree data is generated from the statistical evaluation data. In this manner, the variance normalization is performed in accordance with the normalization degree data based upon normalization strength having a value, or values, being 0 with respect to a given threshold value. Acero merely describes improving speech recognition through front-end normalization of feature vectors (i.e., portions of speech data). In other words, feature vectors are collected based on the probability of a current speech frame being noise-based. These feature vectors are derived from a speech signal. Acero does not disclose, or suggest, a speech signal preprocessing, including performing a statistical analysis of the speech signal to generate a statistical evaluation data, generating normalization degree data from the statistical evaluation data, and performing variance normalization on the speech signal in accordance with the normalization degree data, as recited in amended Claim 1.

Accordingly, Applicant respectfully requests that the rejection of Claims 1-6 and 9-13 under 35 U.S.C. § 102 be withdrawn.

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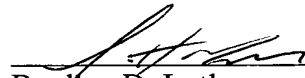
<sup>4</sup> Acero at column 3, lines 40-55.

CONCLUSION

Consequently, in view of the foregoing amendment and remarks, it is respectfully submitted that the present Application, including Claims 1-13, is patently distinguished over the prior art, in condition for allowance, and such action is respectfully requested at an early date.

Respectfully submitted,

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